



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,706	02/11/2004	Brent E. Little	LO-24	3448
35723	7590	06/15/2005	EXAMINER	
LITTLE OPTICS, INC 9020 JUNCTION DRIVE ANNAPOLIS JUNCTION, MD 20701			ROJAS, OMAR R	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/776,706

Applicant(s)

LITTLE, BRENT E.

Examiner

Omar Rojas

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on February 11, 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0204</u> . | 6) <input checked="" type="checkbox"/> Other: <u>Detailed Action</u> . |

DETAILED ACTION

Information Disclosure Statement

1. The prior art documents submitted by applicant in the Information Disclosure Statement(s) filed on February 11, 2004 have all been considered and made of record (note the attached copy of form(s) PTO-1449).

Specification

2. The disclosure is objected to because of the following informalities: A typographical and/or spelling error appears on page 4, line 10.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1, 3-7, and 9-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Patent No. 6,819,853 B2 to Lam et al. (hereinafter "Lam").**

Regarding claim 1, Lam teaches an optical via (e.g., see Figure 4(a)) comprising:

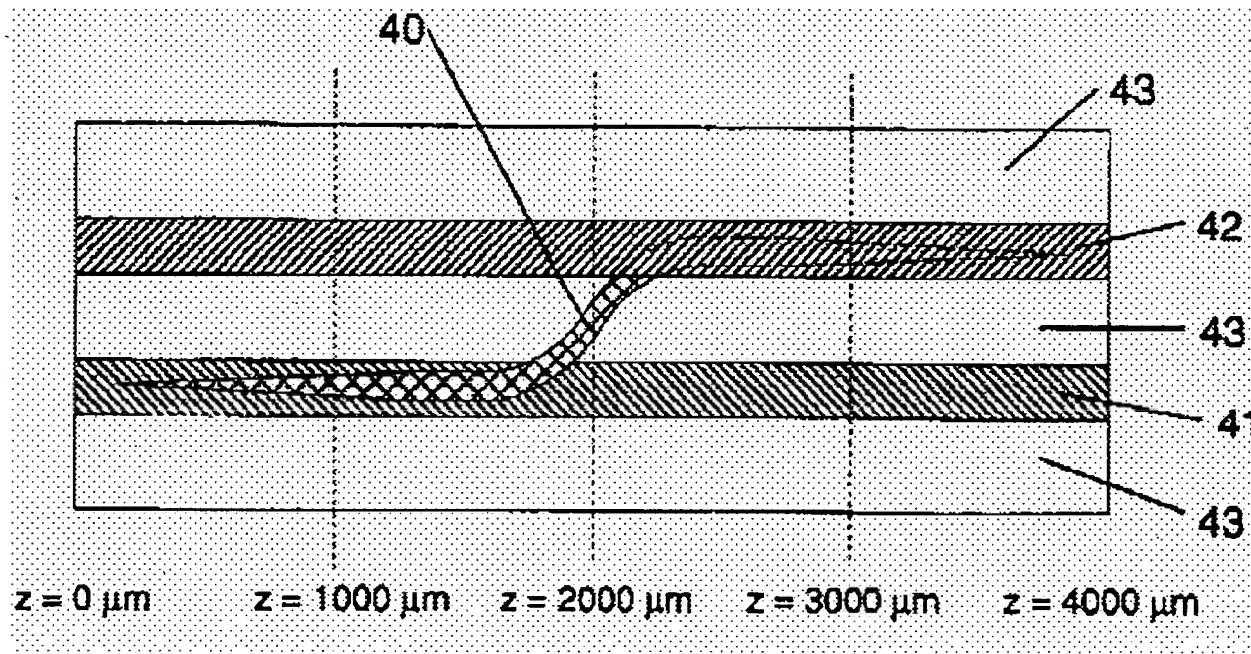
(a) a first waveguide 40 in a first planar layer, said first waveguide having a first refractive index value and an input end, and supporting an optical mode with a first effective index value,

Art Unit: 2874

(b) a second waveguide 42 in a second planar layer, said second waveguide having a second refractive index value and an output end, and supporting a second optical mode with a second effective index value,

(c) said first mode of said first waveguide and said second mode of second waveguide evanescently interacting over an interaction length, and

(d) means for adjusting the magnitude of said mode-to-mode evanescent interaction, adjusting the detuning between said effective indexes of said first and second modes, and adjusting said interaction length, in such a way as to effect broadband and substantially complete optical power transfer from said input of first waveguide to said output of second waveguide. See column 4, lines 29-54. Figure 4(a) is reproduced below.



Regarding claim 3, the means of adjusting the magnitude of waveguide-to-waveguide interaction comprises adjusting the physical separation between said first waveguide 40 and said second waveguide 42 as shown in Figure 4(a).

Art Unit: 2874

Regarding claim 4, the input/output ends of first waveguide 40 are tapered along the interaction length to adjust the detuning between effective indices of the first and second modes.

Regarding claim 5, the first waveguide 40 is tapered linearly as shown in Figure 4(a) from an input end (i.e., the right tip of waveguide 40) to an output end over an interaction length.

Regarding claim 6, see Figure 4(b) of Lam and col. 4, lines 5-7 (disclosing the use of silica for the waveguides).

Regarding claims 7 and 9-12, the previous remarks are incorporated herein. Lam discloses substantially the same invention as claimed.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

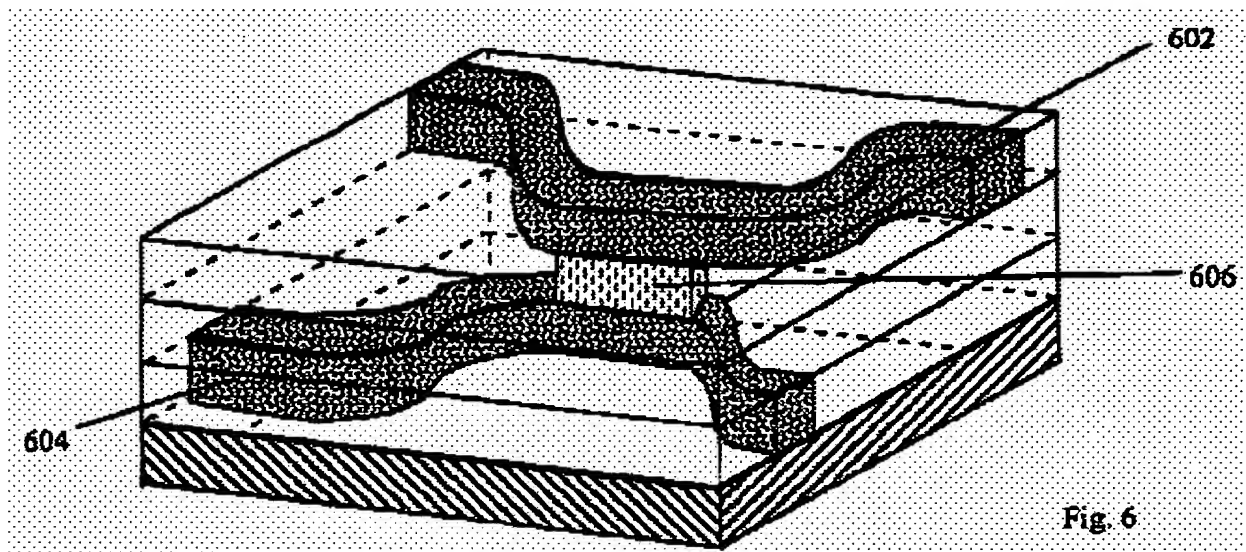
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patent No. 6,724,968 to Lackritz et al. (hereinafter "Lackritz") in view of Lam.

Regarding claims 1-12, as seen in his Figure 6, Lackritz discloses first and second waveguides (602, 604) which are formed in different planar layers and interact over a coupling region 606. The physical separation of the waveguides 602, 604 changes in said coupling region 606 since

Art Unit: 2874

the waveguides are brought closer together. The waveguides may have the same refractive indices depending on the amount of coupling desired between the waveguides (see column 22, lines 44-60). The waveguides may be made of polymer material (col. 6, lines 9-12). Figure 6 of Lackritz is reproduced below.



Thus, Lackritz only substantially differs from claims 1-12 in that Lackritz does not expressly teach adjusting the detuning between the first and second modes by changing the width of one or both waveguides using tapering (e.g., as recited by claim 5).

Lam, as previously mentioned, teaches all the limitations of claim 5.

The motivation for combining Lam with Lackritz is to achieve adiabatic power transfer between the waveguides. See Lam at col. 4, lines 37-40.

Art Unit: 2874

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claims 1-12 by combining Lam with Lackritz.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional references cited on the attached form PTO-892 disclose similar multi-layer waveguide structures.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Omar Rojas whose telephone number is (571) 272-2357. The examiner can normally be reached on Monday-Friday (7:00AM-3:00PM).

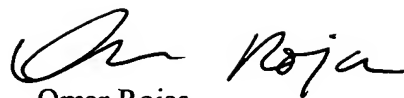
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick, can be reached on (571) 272-2344. The official facsimile number for regular and After Final communications is (703) 872-9306. The examiner's RightFAX number is (571) 273-2357.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/776,706

Page 7

Art Unit: 2874

A handwritten signature in black ink, appearing to read "Omar Rojas". The signature is fluid and cursive, with the first name "Omar" written more quickly than the last name "Rojas".

Omar Rojas
Patent Examiner
Art Unit 2874

or

June 13, 2005